CLAIMS

What is claimed is:

1. A method for temporal interpolation of video frames within a source video sequence having a plurality of video frames sequentially arranged to form an image, each video frame containing image information data arranged within a video image border, said method comprising the steps of:

reading two adjacent video frames of said source video sequence;

detecting and removing video frame defects;

broadening a video frame beyond its original border, whereby interpolation of a new video frame is enabled;

splitting said video frame into a plurality of blocks;

determining a displacement vector for each block;

providing a means of automatic adjustment of system parameters for a given source video sequence;

providing a means of data storage, whereby electronic video frame information and operational information is stored and retrieved;

providing a means of motion estimation between said video frames;

providing a means of detection of scene changes within said source video sequence;

selecting among at least one type of interpolation means based on said motion estimation;

interpolating and inserting at least one new video frame into said source video sequence;

providing a means of evaluating the quality of a new video sequence following interpolation; and

reiterating the steps of motion estimation and detection of scene changes until satisfactory quality is achieved.

2. The method of claim 1 further comprising the step of determining true motion vectors that precisely correspond to motion taking place in said source video sequence.

3. The method of claim 1 further comprising the step of forming intermediate video frames, whereby breaks caused by overlapping of said video frame blocks is eliminated.

4. The method of claim 1 further comprising the step of extrapolating and searching beyond said video frame borders.

5. The method of claim 1, whereby insertion of a plurality of video frames between two adjacent video frames is enabled.

6. The method of claim 1, wherein said video sequence is a restored video sequence following compression by a coding method.

7. The method of claim 1, wherein said video sequence is in any video format (e.g., SIF, QCIF, R601).

8. The method of claim 1, whereby processing of said video sequence is performed in real time.

9. The method of claim 1, whereby the step of quality evaluation of said new video frame interpolation is based on evaluation of displacement vector size for given video frame blocks that exceeds an established error threshold.

10. The method of claim 1 further comprising the step of providing a means for automatic adjustment of video processing parameters to accommodate the character of motion in each source video sequence, whereby no preliminary adjustment of parameters for a particular video sequence is required.

11. The method of claim 1 whereby the steps are carried out by computer software.

12. The method of claim 1 whereby the steps are carried out by hardware.

13. The method of claim 1 whereby the steps are carried out by any combination of software and hardware.